

The scope of physics chapter # 1

[Science](#), [Physics](#)



THE SCOPE OF PHYSICS CHAPTER # 1 QUESTIONS shahali_81@yahoo. com

QUESTIONS 1994 Q. 1 Q. 8 (a) (a) Name three Muslim scientists? (3) Fill in the blanks:(1) (viii) The dimension of any physical quantity can always be expressed as some combination of the fundamental quantities. 1995 Q. 1 (c) What are the dimensions of angular velocity “ ω ”? Show that the equation $\omega^2 T^2$ is (3) (1) dimensionally correct, where “ T ” is the time period of a simple pendulum of length “ l ” at the place where acceleration due to gravity is “ g ”. Fill in the blanks:(v) Candela is the unit of intensity of light. Q. 8 (a) 1996 Q. 1 (a) (i) Fill in the blanks:* Pinhole camera was designed by Ibn-ul-Haitam. * The basic unit of luminous body is candela (Cd). (2) 1998 Q. 1 (a) (i) (ii) Q. 1 (a) Give the names of three Muslim scientists who made remarkable contributions in the field of Physics. The S. I unit of Luminous intensity is candela (Cd). (2) 2000 State True or False for the following statements:(i) Kitab-ul- Manazir was written by Al-Razi. (ii) Thermodynamic unit of temperature is kelvin. (2) (F) (T) (2) Ibn-ul-Haitam * * (2) Ibn-e-Sina 2001 Q. 1 (a) Choose the correct answer from the given options:(i) Laws of reflection and refraction are given by ____. * AL-Razi * Al-Beruni * (iii) The dimensions of angular Momentum is ____. * * * Show that the following equations are dimensionally correct:(i) Hint: $\omega^2 T^2$, , , , $\omega^2 \hat{r}$, - Q. 1 (c) Page 1 of 111 “ All Science Is Either Physics Or Stamp Collecting ” Rutherford THE SCOPE OF PHYSICS CHAPTER # 1 QUESTIONS shahali_81@yahoo. com \hat{r} \hat{r} () () Proved (ii) Hint: , , , , , - () Proved 2002 P/E Q. 1 (a) Choose the correct answer for each from the given options:(2) (i) The famous book on astronomy “ Kitab-ul-Qanoon-ul-Masoodi ” was written by ____. * Ibn-ul-Haitam * Abu-Rehan-al-Beruni * Ibn-e-Sina * Al-Khwarizmi (ii) The dimensions of

angular velocity are ____.

**** 2002 P/M Q. 1 (a) Q. 2 (a) Select the correct answer for each from the given options:(1) (i) The famous book on astronomy " Kitab-ul-Qanoon-ul-Masoodi" was written by ____.

* Al-Beruni * Al-Battani * AL-Masoodi * Al-Kindi Select the correct answer for each from the given options:(2) The dimensions of kinetic energy are ____.

**** (iii) The number of Significant figures in are ____.

* 2 * 4 * 7 2003 P/E Q. 1 (a) Choose the correct answer for each from the given options:(i) Candela is the unit of ____.

* Force * Luminous intensity * (ii) The dimensions of angular Momentum are ____.

*** (2) Mass * (2) Velocity 2003 P/M Q. 1 (a) Select the correct answer for each from the given options:(i) For the quantity , the number of significant figures is ____.

* 3 * 4 * 7 (ii) The dimension of G are ____.

**** (1) * None of these (4) 2004 Q. 1 (a) Q. 1 (b) Select the correct answer for each from the given options:(i) The author of Al-Qanoon-Fit-Tib was ____.

* Al-Razi * Ibn-e-Sina * Omer Khayyam Prove that the following equation are dimensionally correct:(i) Hint:" All Science Is Either Physics Or Stamp Collecting" Rutherford Page 2 of 111 THE SCOPE OF PHYSICS CHAPTER # 1 [] QUESTIONS , , [] () () Proved shahali_81@yahoo. com , , - , - , - () (()) (() (ii) Hint:- $\hat{a}^{\hat{s}}$, , , $\hat{a}^{\hat{s}} \hat{a}^{\hat{s}} \hat{a}^{\hat{s}} \hat{a}^{\hat{s}}$ () , , - () () Proved 2005 Q. 1 (a) Select the correct answer for each from the given options:(i) The number has ____ significant figures.

* 3 * 4 * 5 * (iii) Which of the following was written by Ibn-ul-Haitam? * Kitab-ul-Manazir * Kitab-ul-Qanoon-ul-Masoodi * Kiatb-al-Shifa * Al-Qanoon-ul-Fit-Tib (2) 2006 Q. 1 (a) Q. 3 (a) Select the correct answer for each from the given options:(i) The number of significant figures in is ____.

**** Choose the correct answer:(i) The dimensions of power is ____.

** (2) * (1) * Al-Razi (1) * (1) Page 3 of 111 2007 Q. 1 (a) Q. 3 (a) Select the

correct answer for each from the given options:(i) Kitab-ul-Manazir was written by ____ . * Ibn-ul-Haitam * Al-Beruni * Ibn-e-Sina Select the correct answer for each from the given options:(ii) The basic unit of luminous intensity is ____ . * * * Select the correct answer for each from the given options:(i) The dimensions of linear Momentum are ____ . " All Science Is Either Physics Or Stamp Collecting" Rutherford Q. 4 (a) THE SCOPE OF PHYSICS CHAPTER # 1 * Q. 1 (a) * QUESTIONS * * shahali_81@yahoo. com 2008 Select the correct answer for each from the given options:(i) The author of book Al-Shifa was ____ . * Al-Razi * Abu Rehan Al-Beruni * Ibn-e-Sina * Ibn-ul-Haitam (iii) The dimensions of torque are ____ . * * * Select the correct answer for each from the given options:(i) The numbers of significant figures in 0.005040 is ____ . * * * * (2) * (1) Q. 2 (a) 2009 Q. 1 Choose the correct answer for each from the given options:(i) Screw and lever were invented by ____ . * Newton * Al-Farabi * Archimedes (xiv) The number of significant figures in is ____ . * * * * (vi) The dimensions of kinetic energy are ____ . * * * (3) * Galileo Galilei * 2010 Q. 1 Choose the correct answer for each from the given options:(i) The number of significant figures of is ____ . * * * * (xvi) Kitabul-Manazir is written by ____ . * Ibn-e-Sina * Ibn-ul-Haitam * (xvii) The dimensions of angular Momentum are ____ . * * * (3) Al-Razi * * Al-Beruni 2011 Q. 1 Select the most appropriate answer for each from the given options:(vii) The dimensions of G are ____ . * * * (xii) Light year is the unit of ____ . * Time * Energy * Intensity (2) * * Distance (1) 2012 Q. 1 Q. 2 Select the most appropriate answer for each from the given options:(i) The product of two numbers and in the prospective significant number is ____ . * * * * (ii) Give the dimensions of the following quantities :(a) Torque (b) Angular momentum (c)

Pressure (d) K. E. (a) Torque () Hint:- Torque is given as , , , , ((b) ,) , () (4)

Angular momentum Hint:- Angular momentum is given as () Page 4 of 111 “

All Science Is Either Physics Or Stamp Collecting" Rutherford THE SCOPE OF PHYSICS CHAPTER # 1 QUESTIONS , , (,) , () , - shahali_81@yahoo. com , -

(c) Pressure Hint:- Pressure is given as , , , , , - (d) K. E. Hint:- Kinetic Energy is given as , , , , - () () () Page 5 of 111 “ All Science Is Either Physics Or Stamp Collecting" Rutherford SCALARS & VECTORS CHAPTER # 2 QUESTIONS shahali_81@yahoo. com QUESTIONS 1992 Q. 1 Q. 1 (a) (c) Define Scalar product of two vectors. What are the properties of Scalar product? Give at least one example of Scalar product? (1+3+1) Fill in blanks with the correct answer chosen from the brackets:(6) (i) If a null or ___ is multiplied by any finite number it gives a zero vector. (Unit vector, Zero vector) (ii) If a vector is divided by its magnitude, a ___ vector is obtained. (Zero, Unit) (iii) The component of a vector is the ___ value in a given direction. (Effective, Ineffective) (iv) Torque is the vector product of displacement vector and ___ vector. (Momentum, Force) 1993 Q. 1 Q. 1 (a) (b) What are Vector and Scalar quantities? (2) Two forces \hat{a} and \hat{b} are acting at a point making an angle “ \hat{i} ". Assuming that vector \hat{a} is along X-axis, find the magnitude and direction of the resultant force by resolving them in to their Rectangular components. (5) 1994 ARI F RAZA Q. 1 Q. 8 Q. 8 (a) (a) (c) Explain Commutative and Distributive laws for Dot product? Fill in the blanks:(i) A vector in any given direction whose magnitude is one is called a Unit vector. Choose the correct answer for each from the given options:(i) If \hat{a} and \hat{b} are two vectors, which of the following is correct? $\hat{a} \cdot \hat{b} = \hat{a} \cdot \hat{b}$ $\hat{a} \cdot \hat{b} = \hat{b} \cdot \hat{a}$ $\hat{a} \cdot \hat{b} = \hat{a} \cdot \hat{a} + \hat{b} \cdot \hat{b}$ * * * (5) (1) (1) $\hat{a} \cdot$

1995 Q. 1 (a) Q. 1 Q. 8 Q. 8 (a) (c) (c) Define Vector product of two vectors. If vector \vec{a} and \vec{b} are inclined at angle " \hat{i} ," with respect to each other, show that $(\vec{a} \times \vec{b}) \cdot \vec{c} = (\vec{a} \cdot \vec{c}) \times \vec{b}$. (2+4) OR Describe the addition of vectors by Rectangular-Components method. (6) Write down whether the following statement is True or False: (1) (xi) A Free vector is the one which can change its direction. (F) Choose the correct answer for each from the given options: (1) \vec{a} and \vec{b} $\vec{a} \times \vec{b}$ then ____.

(xxi) If \vec{a} \vec{b} \vec{c} & \vec{d} are parallel to each other * $\vec{a} \times \vec{b}$ — & $\vec{c} \times \vec{d}$ are perpendicular to each other * * At least $\vec{a} \times \vec{b}$ or $\vec{c} \times \vec{d}$ is a null vector

1996 Q. 1 (a) (ii) Choose the correct answer for each from the given options: (2) \vec{a} and \vec{b} are two vectors, then ____.

(1) If $\vec{a} \times \vec{b} = \vec{a} \times \vec{c}$ $\vec{a} \times \vec{b} = \vec{a} \times \vec{c}$ $\vec{a} \times \vec{b} = \vec{a} \times \vec{c}$ * * * (2) If the vector addition of two vectors of magnitude and has a resultant of , then the angle between these two vectors is ____.

* * * Using the definition of Vector product, prove the " Law of Sines" for a plane triangle of sides a, b & c. (6) Describe any two of following: (6) (iv) Addition of vectors by Rectangular-Components method.

Page 6 of 111 " The Most Incomprehensible About The Universe Is That It Is Comprehensible" Einstein Q. 1 Q. 4 (b) (c) SCALARS & VECTORS CHAPTER # 2 QUESTIONS shahali_81@yahoo. com 1997 Q. 1 (a) Q. 1 (b) Select the correct answer from the given possible answer: (i) If \vec{a} and \vec{b} are two vectors, which of the following is correct? $\vec{a} \times \vec{b} = \vec{a} \times \vec{b}$ $\vec{a} \times \vec{b} = \vec{a} \times \vec{b}$ $\vec{a} \times \vec{b} = \vec{a} \times \vec{b}$ $\vec{a} \times \vec{b} = \vec{a} \times \vec{b}$ * * Define: (i) Unit vector; (ii) Null vector. (1) * $\vec{a} \times \vec{b}$ (2) 1998 Q. 1 (a) Q. 1 Q. 1 Q. 1 (b) (a) (b) Choose the correct answer from the given options: (i) If \vec{a} and \vec{b} are two vectors, which of the following is correct? $\vec{a} \times \vec{b} = \vec{a} \times \vec{b}$ $\vec{a} \times \vec{b} = \vec{a} \times \vec{b}$ $\vec{a} \times \vec{b} = \vec{a} \times \vec{b}$ $\vec{a} \times \vec{b} = \vec{a} \times \vec{b}$ * * Describe the addition

of Vectors by Rectangular-Components method. (1) * \hat{a} \hat{b} (6) 1999 Fill in the blank with the correct answer:(1) (i) A vector in any given direction whose magnitude is one is called a Unit vector. (i) What are the Dot product and Cross products? Give their properties and examples. (1+1+1+1) (ii) Prove that:(3) $\hat{a} \cdot \hat{a} = \hat{b} \cdot \hat{b} = \hat{c} \cdot \hat{c} = \hat{d} \cdot \hat{d} = \hat{e} \cdot \hat{e} = \hat{f} \cdot \hat{f} = \hat{g} \cdot \hat{g} = \hat{h} \cdot \hat{h} = \hat{i} \cdot \hat{i} = \hat{j} \cdot \hat{j} = \hat{k} \cdot \hat{k} = 1$ (i) (ii) $(\hat{a} \cdot \hat{b} - \hat{b} \cdot \hat{a}) = 0$ $(\hat{a} \cdot \hat{b} - \hat{b} \cdot \hat{a}) = 0$ (iii) 2000 ARI F RAZA Q. 1 (a) Q. 1 (b) State True or False for the following statements:(2) (iii) Null vector acts in a particular direction. (F) (iv) Dot product of two unit vectors acting along same direction is zero. (F) $\hat{a} \cdot \hat{a} = \hat{b} \cdot \hat{b} = \hat{c} \cdot \hat{c} = \hat{d} \cdot \hat{d} = \hat{e} \cdot \hat{e} = \hat{f} \cdot \hat{f} = \hat{g} \cdot \hat{g} = \hat{h} \cdot \hat{h} = \hat{i} \cdot \hat{i} = \hat{j} \cdot \hat{j} = \hat{k} \cdot \hat{k} = 1$ & $\hat{a} \cdot \hat{b} = \hat{b} \cdot \hat{a} = \hat{c} \cdot \hat{d} = \hat{d} \cdot \hat{c} = \hat{e} \cdot \hat{f} = \hat{f} \cdot \hat{e} = \hat{g} \cdot \hat{h} = \hat{h} \cdot \hat{g} = \hat{i} \cdot \hat{j} = \hat{j} \cdot \hat{i} = \hat{j} \cdot \hat{k} = \hat{k} \cdot \hat{j} = \hat{k} \cdot \hat{i} = \hat{i} \cdot \hat{k} = 0$ are two vectors which acts at a point and make angles " \hat{i}_1 " & " \hat{i}_2 " respectively with X(i) axis. Find an expression only for the magnitude of their resultant using Rectangular-Components method. (6) (ii) If $\hat{a} \cdot \hat{b} = \hat{b} \cdot \hat{a}$ & $\hat{a} \cdot \hat{c} = \hat{c} \cdot \hat{a}$ represents the adjacent sides of a parallelogram then show that $|\hat{a} \cdot \hat{b} - \hat{b} \cdot \hat{a}|$ represents area of the parallelogram. (3) 2001 Q. 1 (a) Q. 1 Q. 1 (b) (a) Choose the correct answer from the given options: $\hat{i} \cdot (\hat{i} \cdot \hat{j})$ has value ___. $\hat{i} \cdot \hat{i}$, (ii) * * * $\hat{i} \cdot \hat{j}$, * Define Scalar product of two vectors and show that $\hat{a} \cdot \hat{b} = \hat{b} \cdot \hat{a}$ (1) $\hat{i} \cdot \hat{i} = \hat{j} \cdot \hat{j} = \hat{k} \cdot \hat{k} = 1$, $\hat{a} \cdot \hat{b} = \hat{b} \cdot \hat{a}$ $\hat{a} \cdot \hat{c} = \hat{c} \cdot \hat{a}$ $\hat{a} \cdot \hat{d} = \hat{d} \cdot \hat{a}$ $\hat{a} \cdot \hat{e} = \hat{e} \cdot \hat{a}$ (1+4) 2002P/E Q. 1 (c) Choose the correct answer for each from the given options:(1) $\hat{i} \cdot \hat{i}$, (i) The magnitude of product $\hat{i} \cdot (\hat{i} \cdot \hat{j})$ is ___. * * * * Explain the addition of two vectors by Rectangular-Components method. Calculate the resultant force. (5) 2002P/M Q. 1 Q. 3 (c) (a) Show that $(\hat{a} \cdot \hat{b} - \hat{b} \cdot \hat{a}) = 0$ $(\hat{a} \cdot \hat{b} - \hat{b} \cdot \hat{a}) = 0$ (b) Select the correct answer for each from the given options: $\hat{i} \cdot \hat{i}$, $\hat{i} \cdot \hat{j}$, is equal to ___. (i) * $\hat{i} \cdot \hat{i}$, * $\hat{i} \cdot \hat{j}$, * * (3) (1) 2003P/E Page 7 of 111 " The Most Incomprehensible About The Universe Is That It Is Comprehensible" Einstein SCALARS & VECTORS CHAPTER # 2 Q. 1 (a) QUESTIONS Choose the

correct answer for each from the given options: (iii) If two forces of same magnitude $|F_1|$ & $|F_2|$ makes an angle of θ . * * * * Show that: $F_1^2 + F_2^2 - 2F_1F_2 \cos \theta = R^2$ (1) with each other, their resultant is $R = \sqrt{F_1^2 + F_2^2 - 2F_1F_2 \cos \theta}$. Q. 1 (b) (4) 2003P/M Q. 1 (a) Q. 1 Q. 2 (c) (a) Select the correct answer for each from the given options: (1) (iii) If a vector quantity is divided by its magnitude the vector obtained is called ____. * Unit vector * Position vector * Null vector * Free vector Define Vector product of two vectors and show that: $(\hat{i} \times \hat{j}) \times \hat{k} = \hat{i}$ & $(\hat{j} \times \hat{k}) \times \hat{i} = \hat{j}$ Select the correct answer for each from the given options: (1) (iii) The Dot product of unit vectors $\hat{i}, \hat{j}, \hat{k}$ is ____. * * * * $\hat{i} \cdot \hat{i} = 1$, 2004 Q. 1 (a) Select the correct answer for each from the given options: (2) $\hat{a} \cdot \hat{b} = 0$, $\hat{a} \times \hat{b} = 0$, then the vectors are ____. (ii) If $\hat{a} \cdot \hat{b} = |\hat{a}| |\hat{b}|$ * Parallel * Opposite * Perpendicular * None of these $\hat{a} \cdot \hat{b} = |\hat{a}| |\hat{b}| \cos \theta$, the angle between the vectors \hat{a} & \hat{b} is ____. (iii) When $\hat{a} \cdot \hat{b} = 0$ * * * How many methods of addition of vectors are given in your book? Write their names. Describe the addition of two vectors \hat{a}_1 & \hat{a}_2 , making angle " θ_1 " & " θ_2 " with +ve X-axis respectively by Rectangular Components method. (1+3) ARI F RAZA Q. 1 (c) 2005 Q. 1 (a) Q. 1 Q. 1 (b) (c) Select the correct answer for each from the given options: (1) $\hat{a} \cdot \hat{a} = |\hat{a}|^2$ and $\hat{a} \cdot \hat{b} = |\hat{a}| |\hat{b}| \cos \theta$ and $\hat{a} \times \hat{a} = 0$ and $\hat{a} \times \hat{b} = |\hat{a}| |\hat{b}| \sin \theta$ (ii) If $\hat{a} \cdot \hat{b} = 0$, then vector $\hat{a} \times \hat{b}$ is ____. * Equal to $\hat{a} \times \hat{b}$ * Zero * Perpendicular to $\hat{a} \times \hat{b}$ * Parallel to $\hat{a} \times \hat{b}$ Define the following: (3) (i) Unit vector; (ii) Position vector; (iii) Free vector. Explain Cross-product of two vectors. Show that the magnitude of the Vector product gives the area of the parallelogram whose adjacent sides are represented by the two vectors. (3+2) 2006 Q. 1 (a) Q. 1 Q. 1 (b) (a) Select the correct answer for each from the given options: $\hat{i}, \hat{j}, \hat{k}$

is equal to _____. (iii) Describe the addition of two vectors by Rectangular-Components method. (1) (4) (1) $\hat{i} - \hat{j}$ (2+2) (2) * Momentum

Page 8 of 111 " The Most Incomprehensible About The Universe Is That It Is Comprehensible" Einstein 2007 Select the correct answer for each from the given options:(ii) The area of a parallelogram formed by two vectors $\hat{i} - \hat{j}$ & $\hat{j} - \hat{k}$ is given by _____. $\hat{i} - \hat{j}$ $\hat{j} - \hat{k}$ | $\hat{j} - \hat{k}$ | * * | * Describe the Dot product of two vectors. Show that: $(\hat{i} - \hat{j}) \cdot (\hat{j} - \hat{k}) = \hat{i} \cdot \hat{j} - \hat{i} \cdot \hat{k} - \hat{j} \cdot \hat{j} + \hat{j} \cdot \hat{k}$ Select the correct answer for each from the given options:(i) The Dot product of Force & Velocity is _____. * Work * Power * Energy Q. 1 Q. 3 (b) (a) SCALARS & VECTORS CHAPTER # 2 (iii) QUESTIONS shahali_81@yahoo.com A Vector which can be displaced parallel to itself and is applied at any point is known as ____ vector. * Null * Unit * Position * Free 2008 Q. 1 (a) Select the correct answer for each from the given options:(1) (ii) Two perpendicular vectors having magnitudes & are added. Their resultant has the magnitude _____. * * * * Describe the addition of vectors by Rectangular-Components method. (4) Q. 1 Q. 1 (b) 2009 Choose the correct answer for each from the given options:(3) (ii) If a vector is divided by its magnitude, the resulting vector is called _____. * Position vector * Unit vector * Null vector * Free vector (vii) Two perpendicular vectors having magnitudes of and are added. The resultant has the magnitude of _____. * * * * \hat{i} , \hat{j} are the unit vectors along (xvi) If \hat{i} , \hat{j} axes respectively, then $\hat{i} \cdot \hat{i}$, $\hat{j} \cdot \hat{j}$, * $\hat{i} \cdot \hat{j}$, * * * (i) Can the magnitude of resultant of two vectors of the same magnitude be equal to the magnitude of either of the vectors? Give mathematical reasons for your answer. $\hat{i} - \hat{j}$ $\hat{j} - \hat{k}$ $\hat{k} - \hat{i}$ $\hat{i} - \hat{j}$ $\hat{j} - \hat{k}$ $\hat{k} - \hat{i}$ Ans. | $\hat{i} - \hat{j}$ $\hat{j} - \hat{k}$ | | $\hat{j} - \hat{k}$ $\hat{k} - \hat{i}$ | | $\hat{i} - \hat{j}$ $\hat{k} - \hat{i}$ | | $\hat{i} - \hat{j}$ $\hat{j} - \hat{k}$ | | $\hat{j} - \hat{k}$ $\hat{k} - \hat{i}$ | | $\hat{i} - \hat{j}$ $\hat{k} - \hat{i}$ | ARI F RAZA Q. 2 | $\hat{i} - \hat{j}$ $\hat{j} - \hat{k}$

$\hat{a} \times \hat{a} = 0$, $\hat{a} \times \hat{b} = -\hat{b} \times \hat{a}$, $\hat{a} \times (\hat{b} \times \hat{c}) = \hat{b}(\hat{a} \cdot \hat{c}) - \hat{c}(\hat{a} \cdot \hat{b})$, $(\hat{a} \times \hat{b}) \times \hat{c} = \hat{b}(\hat{a} \cdot \hat{c}) - \hat{a}(\hat{b} \cdot \hat{c})$, $\hat{a} \times (\hat{a} \times \hat{b}) = \hat{a}(\hat{a} \cdot \hat{b}) - \hat{b}$, $(\hat{a} \times \hat{b}) \times (\hat{a} \times \hat{b}) = \hat{a}(\hat{a} \cdot \hat{b}) - \hat{b}(\hat{a} \cdot \hat{a})$, $(\hat{a} \times \hat{b}) \times (\hat{c} \times \hat{d}) = \hat{a}(\hat{b} \cdot \hat{d}) - \hat{b}(\hat{a} \cdot \hat{d}) - \hat{c}(\hat{a} \cdot \hat{b}) + \hat{d}(\hat{a} \cdot \hat{c})$.

Q. 4 (a) Define the Cross-product of two vectors. Show that the Cross-product does not obey

Commutative law. Also prove that :- $\hat{a} \times (\hat{b} \times \hat{c}) = \hat{b}(\hat{a} \cdot \hat{c}) - \hat{c}(\hat{a} \cdot \hat{b})$.

(1+3+3) 2010 Q. 1 Choose the correct answer for each from the given options: $\hat{a} \times \hat{a}$ and $\hat{a} \times \hat{b}$ are (i) \hat{a} and \hat{b} (ii) \hat{a} and \hat{b} (iii) \hat{a} and \hat{b} (iv) If $\hat{a} \times \hat{b} = \hat{c}$, then vector \hat{c} is ____ . * Equal to $\hat{a} \times \hat{b}$ * Zero *

Perpendicular to $\hat{a} \times \hat{b}$ (1) * Parallel to $\hat{a} \times \hat{b}$ Page 9 of 111 " The Most Incomprehensible About The Universe Is That It Is Comprehensible" Einstein

SCALARS & VECTORS CHAPTER # 2 Q. 4 (b) QUESTIONS shahali_81@yahoo.

com Show that the Cross-product of a vector is not commutative $(\hat{a} \times \hat{b}) \times \hat{c} \neq \hat{a} \times (\hat{b} \times \hat{c})$ and prove that the magnitude of the Cross-product of two vectors gives the area of the parallelogram. (4+3) 2011 Q. 1

Q. 2 Select the most appropriate answer for each from the given options: (1) $\hat{a} \times \hat{a}$ and $\hat{a} \times \hat{b}$ are (i) \hat{a} and \hat{b} (ii) \hat{a} and \hat{b} (iii) \hat{a} and \hat{b} (iv) If $\hat{a} \times \hat{b} = \hat{c}$, then vector \hat{c} is ____ . * Equal to $\hat{a} \times \hat{b}$ * Zero * Perpendicular to $\hat{a} \times \hat{b}$ * Parallel to $\hat{a} \times \hat{b}$ (iv) Can the magnitude of resultant of two vectors of the same magnitude be equal to the magnitude of either of the vectors?

Explain mathematically. (4) Hint:- Same as Q. 2 (i) 2009 (a) Two forces \hat{a} and \hat{b} are acting at a point and making angles " \hat{a}, \hat{b} " & \hat{a}, \hat{b} are acting at a point and making angles " \hat{a}, \hat{b} "

The Simplicity, And Not In The Multiplicity And Confusion Of Things. " Newton
 SCALARS & VECTORS CHAPTER # 2 Q. 17 (Q. 1) (d) GOVT DEGREE COLLEGE S. R. E MAJEED, STADIUM ROAD

NUMERICALS Q. 17 (Q. 1) (d) GOVT DEGREE COLLEGE S. R. E MAJEED, STADIUM ROAD
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NUMERICALS Q. 17 (Q. 1) (d) GOVT DEGREE COLLEGE S. R. E MAJEED, STADIUM ROAD
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 NUMERICALS Q. 17 (Q. 1) (d) GOVT DEGREE COLLEGE S. R. E MAJEED, STADIUM ROAD

over a frictionless pulley such that they move vertically. Suppose , find the acceleration of the system and tension in the string. (4+4) 1994 Q. 2 Q. 2 (a)

(b) Explain Displacement, Velocity and Acceleration, showing the difference between a uniform and nonuniform velocity and acceleration by graphic method. (5) Write down the equation of uniformly accelerated rectilinear

motion. What is the most common example of uniformly accelerated motion? What is Free Fall Motion? (3+1+1) OR Explain Momentum and law of conservation of Momentum. (2+3) Define elastic collision in one dimension.

(1) Two bodies having different masses and moving with different velocities have an elastic collision in one dimension. Calculate their final velocities after their collision. (3+3) What will happen if? (i) The masses of the two

bodies are equal; (ii) The masses of the two bodies are equal and one of them is initially at rest. (1. 5+1. 5) Fill in blanks:(1) (ii) The product of mass and velocity is called Momentum. Write down whether the following

statements are True or false:(2) (i) The motion of an air force soldier descending with a parachute is a free fall motion. (F) (v) An inelastic collision is one in which the K. E and Momentum are conserved. (F) Select the correct

answer for each from brackets:(1) (ii) A body remains at rest or continues to move with uniform velocity unless it is acted upon by ____. * A force * An un-

balanced force *A force equal to the weight of the body * None of these ARI F RAZA Q. 2 Q. 2 Q. 2 (a) (b) (c) Q. 8 Q. 8 (a) (b) Q. 8 (c) 1995 Q. 8 (b) Write

down whether the following statements are True or false:(xii) The objects falling freely to the Earth move in the same direction. (1) (T) 1996 Q. 2 (a) (i)

Fill in the blanks:(2) if~ Whenever the average and instantaneous velocities of a body are equal, the body is said to have uniform velocity. if~ The

RAZA Q. 2 Q. 2 Q. 2 (a) (b) (c) Q. 8 Q. 8 (a) (b) Q. 8 (c) 1995 Q. 8 (b) Write down whether the following statements are True or false:(xii) The objects

falling freely to the Earth move in the same direction. (1) (T) 1996 Q. 2 (a) (i)

Fill in the blanks:(2) if~ Whenever the average and instantaneous velocities of a body are equal, the body is said to have uniform velocity. if~ The

dimensions of acceleration are (ii) Choose the correct answer for each from the given options:(1) if~ A rain drop continues to fall with a uniform velocity when ____ . * Its weight is balanced by air friction * Its weight is balanced by air friction and up thrust * Its weight is balanced by air-up thrust Two bodies of equal masses are attached to two ends of a string which passes over a friction pulley. If Page 22 of 111 " Minds Are Like Parachutes: They Only Function When They're Open . " Thomas Dewar Q. 2 (b) MOTION CHAPTER # 3 GOVT DEGREE COLLEGE S. R. E MAJEED STADIUM ROAD KARACHI. QUESTIONS the bodies are moving vertically, find:(i) Expression for tension in the string; (ii) Acceleration of the system. (4+4) 1997 Q. 2 (a) Write True or False:(2) (i) Elastic collision has conservation of energy but does not have conservation of Momentum. (F) (ii) In-elastic collision has conservation of Momentum but no conservation of kinetic energy. (T) Define the following term:(1) (i) Linear Momentum; State and prove the law of conservation of linear Momentum. (1+4) Q. 2 (b) 1998 Q. 2 (a) (i) (ii) The S. I unit of Momentum is (Fill in the blank) (1) In an elastic collision the energy remains conserved whereas the Momentum does not. (Write True or False) (F) (1) (iii) Choose the correct answer from the given options:(1) if~ As a result of constant un-balanced force a body moves with ____ . * Uniform velocity * Uniform acceleration * Variable speed * Uniform speed Two bodies of unequal masses attached to the ends of a string which passes over a frictionless pulley such that the two bodies move vertically. Find:(i) Acceleration of the system; (ii) Tension in the string. (3+3) (i) When a body is placed on an inclined frictionless plane, the force by which the body slides is equal to or (Fill in the blank) (1) ARI F RAZA Q. 2 (b) Q. 3 (a) 1999 Q. 1 Q. 2

(a) (a) Fill in blank with the correct answer:(i) The product of mass & velocity is called Momentum. State True or False for the following statements:(i) In an elastic collision kinetic energy is conserved but not the Momentum. (ii) In an in-elastic collision Momentum is conserved but not the kinetic energy. Define the following term:(i) Linear Momentum; State and prove the law of conservation of linear Momentum (1) (2) (F) (T) (1) (1+4) Q. 2 (b) 2000 Q. 2

(a) Fill in the blanks:(2) (i) A body remains at rest or continues to move with uniform velocity unless acted upon by unbalanced force. (ii) Frictional force is a self-adjusting force and it is said to be maximum when the body starts sliding. (i) Two spherical bodies of different masses moving with different velocities along same line collide elastically with one another. Find expression for the final velocity of only one of the two bodies after collision?

(6) (ii) Derive expression for the acceleration of a body of mass moving down a plane of inclination having friction . (3) Q. 2 (b) 2001 Q. 2 (a) Choose the correct answer from the given options:(i) In an in-elastic collision ____.*

Momentum is conserved but K. E. is not conserved " Minds Are Like Parachutes: They Only Function When They're Open . " Thomas Dewar (1)

Page 23 of 111 MOTION CHAPTER # 3 GOVT DEGREE COLLEGE S. R. E

MAJEED STADIUM ROAD KARACHI. QUESTIONS * K. E is conserved but

Momentum is not conserved * Both Momentum & K. E are conserved *

Neither Momentum nor K. E is conserved Two masses are attached with the ends of a string which passes over a frictionless pulley such that mass is placed on a smooth horizontal plane surface and the mass moves vertically downwards. Find the acceleration of the system and tension in the string.

(2+2) State and prove the law of conservation of linear Momentum. (1+3)

Choose the correct answer from the given options:(1) (ii) The acceleration of a body moving down a smooth plane inclined at will be ____.

*** Q. 2 (b) Q. 3 Q. 4 (c) (a) 2002 P/E Q. 1 Q. 2 (b) (a) Define linear Momentum. Explain the

law of conservation of linear Momentum. (1+2) Choose the correct answer

for each from the given options:(2) (i) Under the influence of a constant unbalanced force a body moves with a ____.

* Uniform velocity * Uniform acceleration * Variable acceleration * Uniform speed (ii) According to

Stokes's law, the force exerted on a sphere of radius moving vertically down with constant velocity in a liquid of viscosity is given by ____.

*** A block of mass is pulled up on a smooth inclined plane with a constant force . Obtain

an expression for the acceleration of the block if the force of friction between the block and plane is . Choose the correct answer for each from the given

options:(1) (iii) A helicopter of mass rises vertically with a constant speed of .

What resultant force acts on the helicopter ? *** ARI F RAZA Q. 2 Q. 3 (b)

(a) 2002 P/M Q. 1 (a) Choose the correct answer for each from the given

options:(2) (ii) If the speed—time graph of a body is a straight line parallel to time-axis, its acceleration will be ____.

* Zero * Maximum * Minimum * Uniform (iii) Stokes's law holds good for the ____.

* Bodies of all shapes * Motion through viscous medium * Motion through non-viscous medium *

Motion through a vacuum Two spheres of different masses moving with

different velocities along the same line makes elastic collision. Derive the

expression for the velocity of one of the spheres after collision. (5) Choose

the correct answer for each from the given options:(1) (i) A stone when

falling from a height of , strikes the ground with velocity of ____.

*** What is an inclined plane? Find expressions for the downward acceleration of a

body on an inclined plane both in the presence and the absence of friction.

(1+4) Q. 1 Q. 2 (c) (a) Q. 3 (c) 2003 P/E Q. 1 (c) Q. 2 Q. 3 (c) (a) Two equal masses are suspended from the two ends of a string which passes over a frictionless pulley in such a way that both of them hang vertically. Drive the formula for acceleration produced in both bodies. (4) A body is placed on an inclined plane. Find out the expressions for its downward acceleration both in the presence and absence of friction. (5) Choose the correct answer for each from the given options:(1) (ii) The unit of linear Momentum is ____.

Choose the correct answer for each from the given options:(2) Page 24 of

111 " Minds Are Like Parachutes: They Only Function When They're Open . "

Thomas Dewar Q. 4 (a) MOTION CHAPTER # 3 (i) GOVT DEGREE COLLEGE S.

R. E MAJEED STADIUM ROAD KARACHI. QUESTIONS In an inelastic collision

____. * Both Momentum & K. E are conserved * Neither Momentum nor K. E is conserved * Only Momentum is conserved * Only kinetic energy is conserved

When a body slides over a surface, the kinetic friction (____ (iii)) and

static friction () are related as * 2003 P/M Q. 1 Q. 2 (b) (a) Give the definition of force on the basis of Newton's first law of motion. Starting with prove that

force is also given by the rate of change of Momentum. (1+2) Select the

correct answer for each from the given options:(1) (i) A car is traveling at north, turns west without a change in speed. The car is moving with ____.

* Uniform velocity * Acceleration * Average velocity * None of them (ii) How

much height does a free falling body of mass lose in ? * * * * Two bodies of unequal masses connected to the two ends of a string, which passes over a

frictionless pulley, move vertically. Derive an expression to show that

acceleration in the bodies is half of acceleration due to gravity if (5) Select

the correct answer for each from the given options:(1) (iii) A body goes from to mark and back to mark in . Its average speed is ____ . * * * * State and prove the law of conservation of linear Momentum. (1+2) ARI F RAZA Q. 2 (c) Q. 3 (a) Q. 4 Q. 2 (b) (a) 2004 Select the correct answer for each from the given options:(2) (i) The rate of change of linear Momentum is equal to ____ . * Acceleration * Force * Torque (iii) The acceleration of a body moving down a frictionless plane inclined at will be ____ . * * * * Prove that all bodies slides with the same acceleration on a frictionless inclined plane. (4) Select the correct answer for each from the given options:(1) (iii) The unit of linear Momentum is ____ . * * * * Give the difference between elastic collision and inelastic collision. Two spheres of unequal masses and moving with the initial velocities in the same direction collide elastically. Derive the relation of final velocity of body . (4) Q. 2 Q. 3 (c) (a) Q. 3 (b) 2005 Q. 2 (a) Select the correct answer for each from the given options:(2) (i) If the speed-time graph of a moving body is a curve, the body moves with ____ . * Constant speed * Constant acceleration * Constant velocity * Changing acceleration (ii) In Stokes's law, the viscous force is not proportional to ____ . * Coefficient of viscosity * Radius of sphere * Terminal velocity * Mass of sphere Two unequal masses are connected to the two ends of a string which passes over a frictionless pulley such that both of them hang vertically. Derive expressions for their acceleration and tension in the string. (5) State and prove the law of conservation of linear Momentum. (1+3) Q. 2 (b) Q. 3 (b) 2006 Page 25 of 111 " Minds Are Like Parachutes: They Only Function When They're Open . " Thomas Dewar MOTION CHAPTER # 3 Q. 1 Q. 2 (c) (a) GOVT DEGREE COLLEGE S. R. E MAJEED STADIUM ROAD KARACHI. QUESTIONS

Derive an expression for the acceleration of a body of mass moving down a plane of inclination having friction . (4) Select the correct answer for each from the given options:(2) (i) Equation represents ____ . * Hooke's law * Stokes's law * Bragg's law * Newton's law (iii) How much height does a free falling body of mass lose in ? * * * * Two non-rotating spheres of unequal masses moving with the initial velocities in the same direction collides elastically. Derive the relation of final velocity of body . Select the correct answer for each from the given options:(1) (ii) The rate of change of linear Momentum is equal to ____ . * Acceleration * Torque * Angular velocity * Force

Q. 2 Q. 3 (b) (a) 2007 Q. 1 (a) Select the correct answer for each from the given options:(1) (iii) When a constant force is applied on a body, it moves with a ____ . * Constant speed * Constant velocity * Constant acceleration * None

Two bodies of unequal masses attached to the two ends of a string which passes over a frictionless pulley such that the two bodies hang vertically. Derive the expression for the acceleration of the bodies. (4) Select the correct answer for each from the given options:(1) (ii) Stokes's law for fluid friction is given as ____ . * * * * State and prove the law of conservation of linear Momentum. (1+3) ARI F RAZA Q. 1 (c) Q. 4 (a) Q. 4 Q. 1 Q. 2 Q. 4 (c) (d) (b) (a) 2008 Two non-rotating spheres of masses moving along a straight line with velocities respectively collide elastically. Derive an expression for the final velocity of mass . (4) Drive an expression for the acceleration of a body moving down an inclined plane where there is friction . (4) Select the correct answer for each from the given options:(1) (ii) In an in-elastic collision of two bodies ____ . * K. E is conserved only * Momentum is conserved only * Both K. E & Momentum are conserved * Neither K. E nor Momentum is

conserved 2009 Q. 1 Choose the correct answer for each from the given options: (1) (iii) If a light object collides elastically with a massive body which is at rest, the light object will ____.

- * Rebound with the same velocity
- * Rebound with twice the velocity
- * Be stopped
- * Cause the massive body to move

(ii) It is observed that all bodies sliding down a frictionless inclined plane have the same acceleration. How does this happen? Explain. (4) (a) Two bodies of unequal masses are attached to the ends of a string which passes over a frictionless pulley. If they are hung vertically, derive the expressions for the tension in the string and the acceleration of the bodies when the mass-string system is in motion. (7) Q. 2 Q. 3 2010 Q. 1 Choose the correct answer for each from the given options: (ii) Stokes's law holds good for ____.

- * Bodies of all shapes
- * Motion through viscous medium
- * Motion through non-viscous medium
- * Motion through a vacuum

(iii) How many meter(s) will a ball, starting from rest, fall freely in one second? " Minds Are Like Parachutes: They Only Function When They're Open . " Thomas Dewar (2) Page 26 of 111 MOTION CHAPTER # 3 GOVT DEGREE COLLEGE S. R. E MAJEED STADIUM ROAD KARACHI. QUESTIONS * * * * It is observed that all bodies sliding down a frictionless inclined plane have the same acceleration. How does this happen? Explain. (4) Define Elastic Collision. Two spherical bodies of masses and moving with initial velocities and collide elastically in one dimension. Derive the expressions for their final velocities. (1+6) Q. 2 Q. 3 (ii) (a) 2011 Q. 1 Select the most appropriate answer for each from the given options: (i) The acceleration of a body moving down a frictionless plane inclined at * * * (xiii) Q. 2 Q. 4 (i) (a) (2) will be ____.

- * A stone, falling freely from a height of , strikes the ground with a velocity of ____.
- * * * * It is

observed that all bodies sliding down a frictionless inclined plane have the same acceleration. How does this happen? Explain. (4) Two bodies of unequal masses are attached to the ends of a string which passes over a frictionless pulley. If one body moves vertically and the second body moves horizontally on a smooth horizontal surface, derive the expressions for tension in the string and the acceleration of the bodies. (7) 2012 Q. 1 Select the most appropriate answer for each from the given options: (2) (ix) A helicopter weighing is moving up with a constant speed of . the force on the helicopter is ____ . * * * * (xiv) The property of fluids due to which they resist their flow is called ____ . * Static friction * Coefficient of friction * Viscosity * Terminal velocity (ix) In a translatory motion, it is not necessary for a body to move in a straight line. Discuss the statement. (4) (a) Define elastic and inelastic collisions. Two non-rotating spheres of masses and , initially moving with the velocities and respectively in one dimension, collide elastically. Derive the expressions for their final velocities and . (1+6) ARI F RAZA Q. 2 Q. 3 Page 27 of 111 " Minds Are Like Parachutes: They Only Function When They're Open . " Thomas Dewar MOTION CHAPTER # 3 NUMERICALS NUMERICALS Q. 1 Q. 2 (c) A () gun (projectile ((velocity of the gun () mounted on wheels shoots a ()) with a muzzle velocity of () above the horizontal. Find the horizontal recoil (5)) at an angle of). ARI F RAZA Hint:- , , ((),), () () () () (() () ()) () () (Q. 2 Q. 2) (c) 1992 A minibus starts moving from the position of rest () at a bus stop with a uniform acceleration. During the 10th second of its motion it covers a distance of 95 m (). Calculate its acceleration () and the total distance covered () in 10 seconds. (5) Page 28 of 111 " The Mediocre Teacher Tells. The Good Teacher

Explains. The Superior Teacher Demonstrates. The Great Teacher Inspires. " William Arthur Ward MOTION CHAPTER # 3 Hint:(i) (ii) (i) () () () () () () () () ARI F RAZA () (ii) () () Q. 3 (Q. 2 , (c)) 1994 A boy throws a ball vertically upwards with a speed of 25 m/s (). On its way down it is caught at a point 5 m () above the ground. How fast () was it coming down at that point? How long did the trip take ()? (4) Hint: Page 29 of 111 " The Mediocre Teacher Tells. The Good Teacher Explains. The Superior Teacher Demonstrates. The Great Teacher Inspires. " William Arthur Ward MOTION CHAPTER # 3 (i) (ii) (i) () () () () , $\hat{\text{A}}^{\text{S}} \hat{\text{A}}^{\text{S}}$ (ii) () () ARI F RAZA $\hat{\text{A}}^{\text{S}}$ ($\hat{\text{A}}^{\text{S}} \hat{\text{A}}^{\text{S}}$) $\hat{\text{A}}^{\text{S}}$ () () Q. 4 (Q. 2 , (c))) 1996 A wooden block () of () is hanging by a string on which a bullet of () has been shot. If the bullet sticks with the block () and is raised up to 5 cm (); find the velocity of the bullet ()? (5) Hint:- (, Page 30 of 111 " The Mediocre Teacher Tells. The Good Teacher Explains. The Superior Teacher Demonstrates. The Great Teacher Inspires. " William Arthur Ward MOTION CHAPTER # 3 ARI F RAZA () () () () () () () () () () () $\hat{\text{A}}^{\text{S}} \hat{\text{A}}^{\text{S}} \hat{\text{A}}^{\text{S}} \hat{\text{A}}^{\text{S}}$ () $\hat{\text{A}}^{\text{S}}$ Q. 5 (Q. 2) (c) 1997 Two bodies A and B are attached to the two ends of string which passes over a frictionless pulley such that the masses hang vertically. If the mass of the one body is (). Find:(i) The mass of the second body () which moves downward with an acceleration of (); (ii) The tension () in the string. (6) Hint:, , , (i) () Page 31 of 111 " The Mediocre Teacher Tells. The Good Teacher Explains. The Superior Teacher Demonstrates. The Great Teacher Inspires. " William Arthur Ward MOTION (()) () CHAPTER # 3 (ii) (() ()) Q. 6 (Q. 2 , (c) Q. 7 (281. 4 m/s) Q. 2 (c)) 1998 A 50 g () bullet is fired in to 10 kg () wooden block () that is suspended by a long chord so that it can swing as pendulum. If the block is

displaced () so that its center of gravity rises by 10 cm (), what is the speed of the bullet ()? (5) Hint:- Same as Q. 4 1999 A motor car is moving up a slope of () with a velocity of (). Suddenly the engine fails (). How much will the car move () before coming to rest. Assume frictionless surface. (4)

Hint:, , , ARI F RAZA (() (())) Q. 8 (Q. 2) (d) 2000 Two blocks of masses () and () are attached to the ends of a string which passes over a frictionless pulley in such a way that block of mass lies on a horizontal surface and the other block hangs vertically. Find the acceleration () of the system and tension () in the string. (4) Hint:, , , (i) ((())) Page 32 of 111 "

The Mediocre Teacher Tells. The Good Teacher Explains. The Superior Teacher Demonstrates. The Great Teacher Inspires. " William Arthur Ward MOTION CHAPTER # 3 (ii) (()) Q. 9 (Q. 1 , (d)) A machine gun fires () per second (() and has a speed of (() necessary to hold the gun in position.

Hint:, , , 2001) in to a target. Each bullet weighs (). Find the force (4) , , (((Q. 2) (d))) ARI F RAZA Q. 10 Q. 11 (Q. 4 (d) 2002 P/E A car starts from rest () and moves with a constant acceleration. During the of its motion it covers a distance of (). Calculate:(i) The acceleration () of the car; (ii) The total distance covered by car during this time (). (4) Hint:- Same as Q. 2) (()

bullet () is fired from () gun () with a speed of (). What is the speed of the recoil of gun ()? (4) Hint:, , , , () () () (() () () () () () () Q. 12 (Q. 3)

(d) A ((Hint:- (2003P/M) golf ball moving with a velocity of (), collides with an) steel ball at rest (). If the collision is elastic, compute the velocities () of both balls after the collision. (4) , , , , Page 33 of 111 " The Mediocre

Teacher Tells. The Good Teacher Explains. The Superior Teacher Demonstrates. The Great Teacher Inspires. " William Arthur Ward MOTION (i)

(((((ii) (())) (())))) (()) CHAPTER # 3 Q. 13 (Q. 4 , (d)) 2004 A wooden ball of mass () is suspended by a thread. The horizontal current of air blows it to one side such that the thread makes an angle of () with vertical; find the tension () in the thread and force of air current (). (4) Hint: , , ARI F RAZA () and () Page 34 of 111 " The Mediocre Teacher Tells. The Good Teacher Explains. The Superior Teacher Demonstrates. The Great Teacher Inspires. " William Arthur Ward MOTION CHAPTER # 3 () () () Q. 14 (Q. 2 , (d)) A ((Hint: , Q. 15 (Q. 1 (Q. 4 (Q. 2 (d)) (d)) (d) 2005) golf ball moving with a velocity of (), collides with an) steel ball at rest (). If the collision is elastic, compute the velocities) of both balls after the collision. (4) Same as Q. 12) 2006 A ball is thrown vertically upwards from the ground with a speed of (). On its way down it is caught at a point () above the ground. How long did the trip take ()? (4) Hint:- Same as Q. 3 (ARI F RAZA Q. 16 A () bullet () is fired from (speed of (). What is the speed of the recoil of gun (Hint:- Same as Q. 11) gun ()?) with a (4) Q. 17 2007 A boy throws a ball upward from the top of a tower with a speed of (). On the way down it just misses the thrower and falls to the ground () below. Find how long () the ball remains in air. (4) Hint: , , (()) Page 35 of 111 " The Mediocre Teacher Tells. The Good Teacher Explains. The Superior Teacher Demonstrates. The Great Teacher Inspires. " William Arthur Ward MOTION CHAPTER # 3 ARI F RAZA $\hat{\text{A}}^{\text{S}}$ ($\hat{\text{A}}^{\text{S}}$ $\hat{\text{A}}^{\text{S}}$) $\hat{\text{A}}^{\text{S}}$ () () (Q. 18 (Q. 2) (ix)) 2008 A helicopter weighs (). a) Calculate the force () on it if it is ascending at a rate of (); b) What will be the force () on the helicopter if it is moving vertically with the constant speed of)? (4) Hint:(a) (b) (a) . / Page 36 of 111 " The Mediocre Teacher Tells. The Good Teacher Explains. The Superior

Teacher Demonstrates. The Great Teacher Inspires. " William Arthur Ward
 MOTION . / CHAPTER # 3 (b) () Q. 19 (Q. 2 , (vii)) 2010 A wooden block ()
 having () mass is suspended by a long cord, that can swing as a pendulum.
 A () bullet is fired which lodges itself in to the block (). Due to impact, the
 center of gravity of the block is raised by (). What was the initial speed of
 the bullet ()? Hint:- Same as Q. 4 2011 () ARI F RAZA Page 37 of 111 " The
 Mediocre Teacher Tells. The Good Teacher Explains. The Superior Teacher
 Demonstrates. The Great Teacher Inspires. " William Arthur Ward Motion In
 Two Dimensions CHAPTER # 4 QUESTIONS shahali_81@yahoo. com
 QUESTIONS 1994 Q. 8 (a) Fill in the blanks:(iii) At maximum height the
 vertical velocity of a projectile is (1) . 1995 Q. 2 (a) A particle is projected at
 an angle to the horizontal with velocity and is allowed to fall freely so that it
 covers a certain distance in a parabolic path. Prove that the expressions for
 the total time of flight and the horizontal range are given by:(7) Q. 2 (b) Q. 8
 (c) In the game of cricket a ball of high trajectory is easy to catch. Explain it?
 (3) Ans:- In cricket, a ball with high trajectory is easy to catch since the time
 of flight is so long that the fielder has plenty of time to get in to position,
 whereas in the case of low trajectory it is much harder to catch the ball since
 the time of flight is not so long. Select the correct answer for each from the
 given options:(2) (xxii) When a particle moves in a circle, the angle between
 its linear velocity and angular velocity is always ____ . * * * * (xxviii) The
 angular speed of the second hand of a watch is ____ rad/sec. ARI F RAZA * * *
 1 * None of these 1996 Q. 3 (a) (i) Fill in blanks:(2) (a) One radian is equal
 to . (b) The time rate of change of angular velocity is called angular
 acceleration. (ii) Choose the correct answer from the given options:(2) (a)

Every point on a rotating body has the same ____.

- * Linear velocity
- * Angular velocity
- * Angular Momentum
- * None of these

(b) When a body is thrown vertically upwards, it is a case of ____.

- * Free fall motion
- * Projectile motion
- * Under-gravity motion

A body is rotating with a uniform linear speed in a circular path of radius r . Derive a formula for its Centripetal acceleration. (7)

Q. 3 (b) 1997 Q. 4 Write short notes on: (i) Centripetal force. " If One Can Not See Gravitation Acting Here, He Has No Soul. " Richard P. Feynman (7. 5)

Page 38 of 111 Motion In Two Dimensions CHAPTER # 4 QUESTIONS shahali_81@yahoo. com 1998 Q. 3 (a) Write down whether the following statement is True or False: (1) There is no difference between rotatory motion and circular motion. (T) (iii) Choose the correct answer from the given options: (1) The range of Ghorri missile is ____ km. * * * * (b) Define projectile motion. A shell is shot from a gun at an angle with the horizontal with an initial velocity u . Derive the expression: (i) For the Maximum Height of projectile; (ii) For the Range of the projectile. (7) Write note on any two of following: (7. 5) (i) Centripetal force. (ii) Q. 3 Q. 4 2000 Q. 3 (a) Choose the correct answer for each from the given options: (4) (i) Maximum height of the projectile depends upon ____.

- * Angle of projection
- * Velocity of projection
- * Both angle & velocity
- * None of these

(ii) S. I. unit of angular velocity is ____.

- * m. sec
- * rad/sec
- * deg/sec
- * rev/sec

(iii) When a body moves along the circumference of a circle with uniform speed, changes takes place in its ____.

- * Linear velocity
- * Tangential acceleration
- * Both

(iv) When a body moves along a parabolic path, which compo